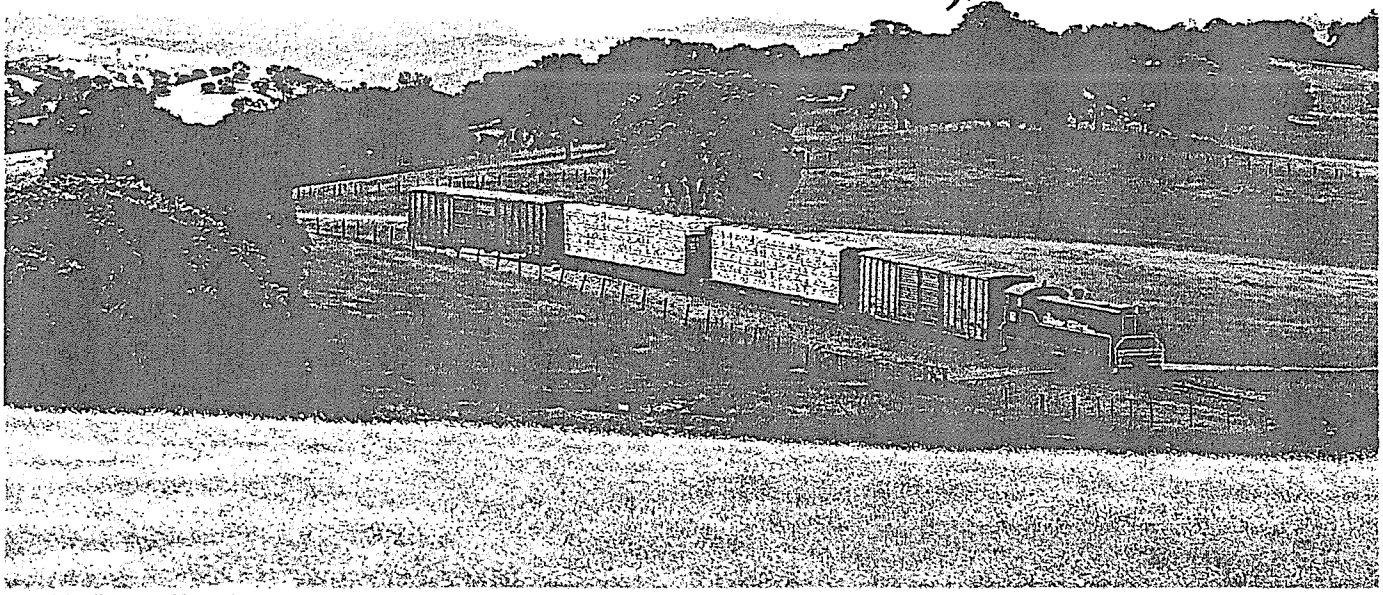
California scenery: The Sierra Nevada, Part I

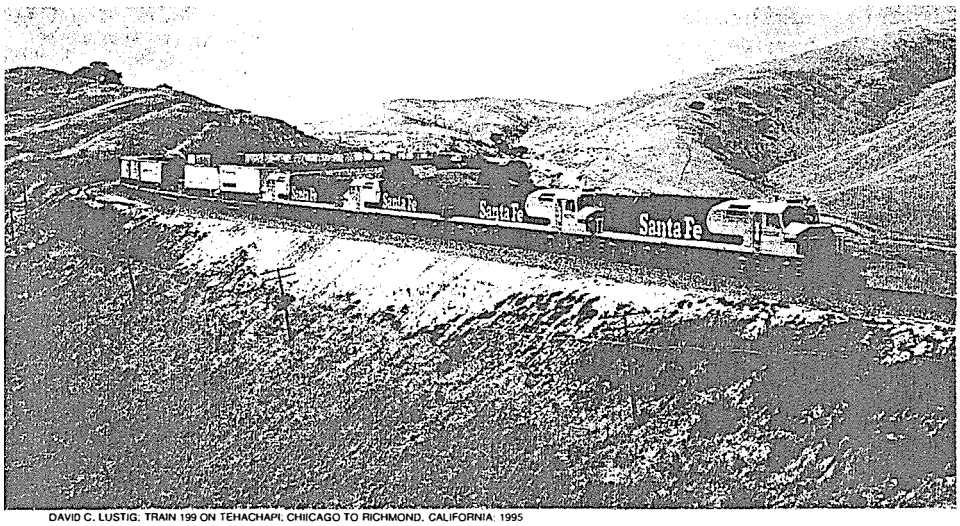


WILLIAM C. SCHAUMBURG; MARTELL, CALIFORNIA; MAY, 1991

A look at the dominant vegetation/**William Laudenslayer, Jr.** and **Herman H. Darr**

The western United States has been a favorite modeling subject of model railroaders since the early days of the hobby, and, given our history, the appeal is understandable. The West is more than a geographic area—it is an idea. However, it is anything but monolithic. While the geographic and cultural boundaries may vary depending upon one's viewpoint, even a cursory inspection reveals the region's diversity. To some extent this has been reflected by modelers over the years, including those who describe their layouts as "generic someplace," but increased accuracy in all phases of the hobby has become more important today. Scenery modeling is included in this trend, and the ability to create "specific scenery" has been aided by the development of new materials and modeling techniques.

As modelers, we are concerned with three aspects of the landscape in our prototype subject's territory: the landforms, the vegetation, and the effects of man. The following article focuses on the vegetation of the Sierra Nevada in California and adjacent Nevada. Although there are practical limits on how closely we can model various types of trees and other plants, simulating their general appearance and how they fit into a setting adds realism and a sense of location to a model railroad. As in other areas of the hobby, it is best to look at the prototype and understand it first. RMC welcomes similar articles on other parts of the country for consideration, especially if accompanied by descriptions of applicable modeling techniques. The area discussed here is within a day's drive of the 2000 National Model Railroad Association National Convention, which will be held near San Jose, California.—EDITOR



DAVID C. LUSTIG; TRAIN 199 ON TEHACHAPI, CHICAGO TO RICHMOND, CALIFORNIA; 1995

Typical California scenery? Grasslands dominate the valleys and extend into the foothills of the Sierra Nevada at the warmer southern end of the range; springtime's green is rapidly replaced by yellow and tan when the dry summer starts. Valley oaks intrude into the fields as the elevation rises, creating the distinctive appearance of the savannah with trees growing singly or in clusters and there is not much underbrush. Blue oaks replace the valley oaks at higher elevations, where more moisture allows denser growth.

As many writers, artists and scientists have pointed out over the years, nature is not a monotone; environmental factors such as latitude, elevation, topography, climate, rainfall patterns, and soils combine to produce tremendous variety in the vegetation of a place. This two-part series will look at the dominant plants in California's Sierra Nevada, an area that has always been popular among model railroaders. Of course, these general descriptions will not necessarily fit specific locations, but they will provide an underlying pattern to follow. Modelers should also investigate the past history of the places they are interested in and consider the period they are modeling, since they have such a great effect on their appearance.

The Sierra Nevada

The Sierra Nevada is a north-south range of mountains extending some 400 miles from near Mount Lassen, in the north, to the Tehachapi Mountains in the south; the chain extends over approximately 5 degrees of latitude, with maximum elevations from around 10,000 feet to 14,494 feet at Mount Whitney. The west slope of the Sierra Nevada rises rather gradually over the 50 miles from the Sacramento and San Joaquin Valleys (less than 300 feet above sea level) to the crest. In the central part of the range, the descent to the east into Owens Valley (3,300 feet above sea level) is rather abrupt, with the mountains dropping 9,000 feet in some 20 miles. Transitions to the east are much more gradual at the northern and southern ends of the chain.

The Sierra Nevada is a rather young mountain range and exhibits steep, many times precipitous, drops into canyons formed by rivers. Precipitation on the west slope of the mountains is generally in winter, coming as rain or snow depending on the elevation and latitude. Precipitation east of the crest is much less than on the west because of the rain shadow effect; on the lee side, precipitation falls primarily as snow in winter. Rainfall in summer is usually the result of thunderstorms. Precipitation also varies with elevation and latitude, falling heavier at higher elevations and latitudes and declining toward the lowlands and the southern portions of the range.

Temperature also follows the same gradient, but in reverse with higher temperatures associated with the lower elevations and latitudes, and lower temperatures in the high country and higher latitudes.

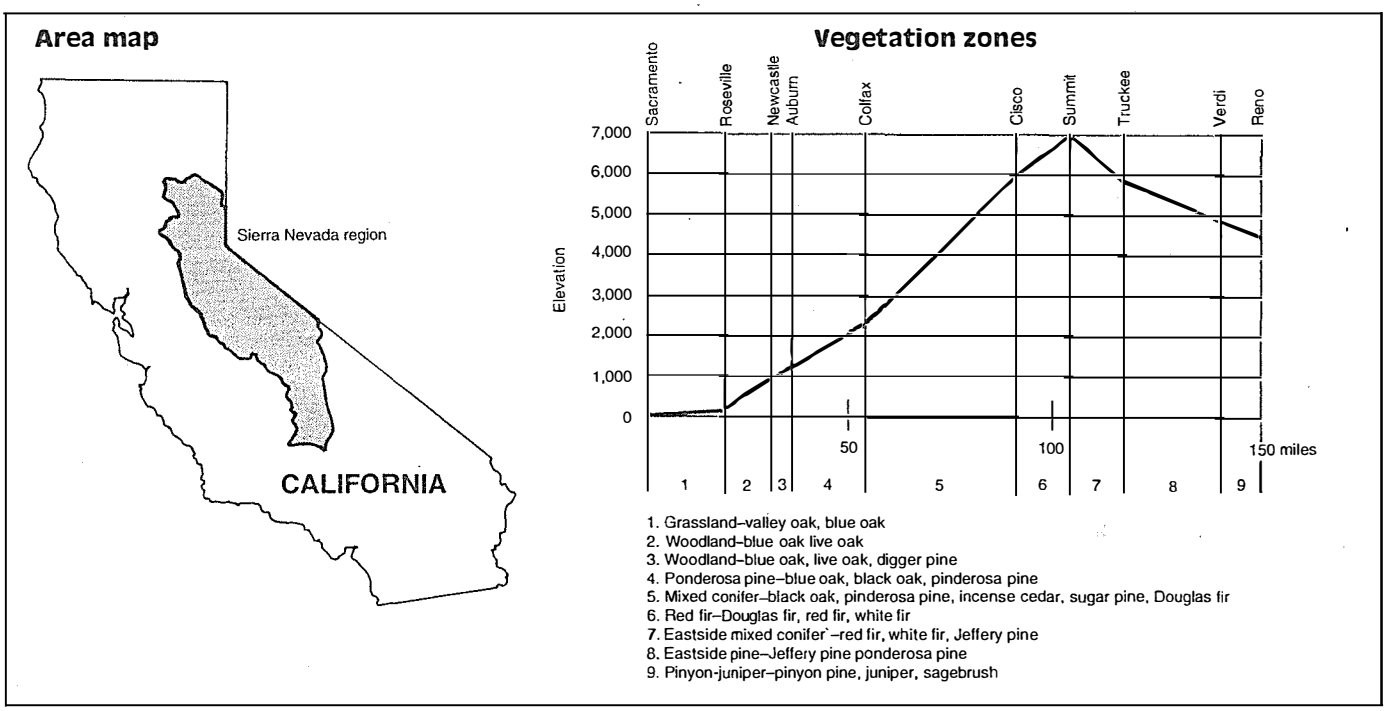
Logically, the rivers tend to flow to the west on the west slope and to the east on the east slope. Because the canyon walls are often quite steep, the amount of sunlight striking their north and south faces varies considerably. The differences in air temperatures and soil moisture may result in different plant communities on the opposite sides of a canyon. This is especially true if its sides face to the north and south. North-facing slopes are cooler and moister, whereas south-facing slopes are hotter and drier. Therefore, plants ordinarily found at higher elevations may be at lower elevations on north-facing slopes, while plants normally found at lower elevations may be at higher elevations on south-facing slopes.

Similarly, the soils are quite variable and range from relatively fertile soils with the capability of good water holding capacity for plant growth to those that are infertile or rocky, or have little water holding capacity.

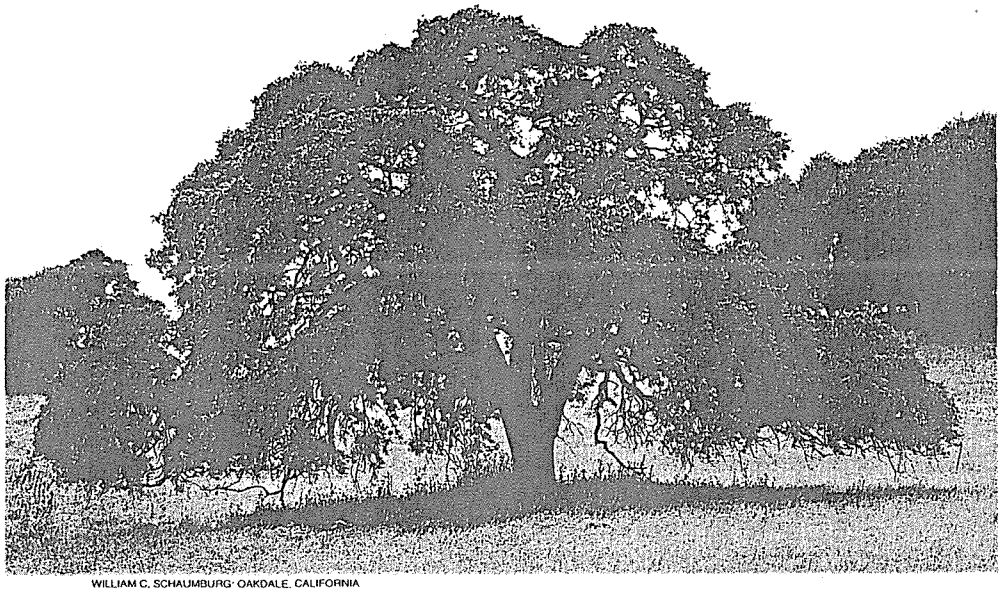
Plant communities of the Sierra Nevada

Certainly one does not need to be a botanist to do scenery on a model railroad scenery, but we can use the field to improve the modeled vegetation on our layouts, just as we use geological information to build up our landforms. The diversity of the physical environment of the Sierra Nevada causes great variation in the plant communities. Detailed information on plant community composition and structure can be found in sources such as *Terrestrial Vegetation of California* (edited by Barbour and Major, 1977, John Wiley and Sons) and *A Guide to Wildlife Habitats of California* (edited by Mayer and Laudenslayer, 1988, California Department of Forestry).

In general, plant composition in the Sierra Nevada gradually changes in response to elevation and latitude, and consequently moisture and temperature. The plant communities will be described as they follow the elevational gradient from west to east. Keep in mind that elevation and latitude are closely linked, and toward the southern end of the Sierra Nevada, the same



California scenery: The Sierra Nevada



WILLIAM C. SCHAUMBURG· OAKDALE, CALIFORNIA

HERMAN H. DARR. GRASS VALLEY, CALIFORNIA

WILLIAM F. LAUDENSLAYER SHINGLETOWN, CALIFORNIA

plant community will generally be found at a higher elevation than at farther north. For example, in the southern portions of the Sierra Nevada, mixed conifer forests may be found at elevations exceeding 7,000 feet, whereas in the northern parts, such forests may only climb to around 5,500 feet. Other parts of the country have similar situations affecting their plant communities, and it is worthwhile for modelers to become aware of those that might apply on their layouts.

Because of climate and local geography, communities similar to those decribed here exist in other parts of California. For modeling purposes, the visual impact will often be much the same. Photos and a personal visit, if possible, provide the best guides.

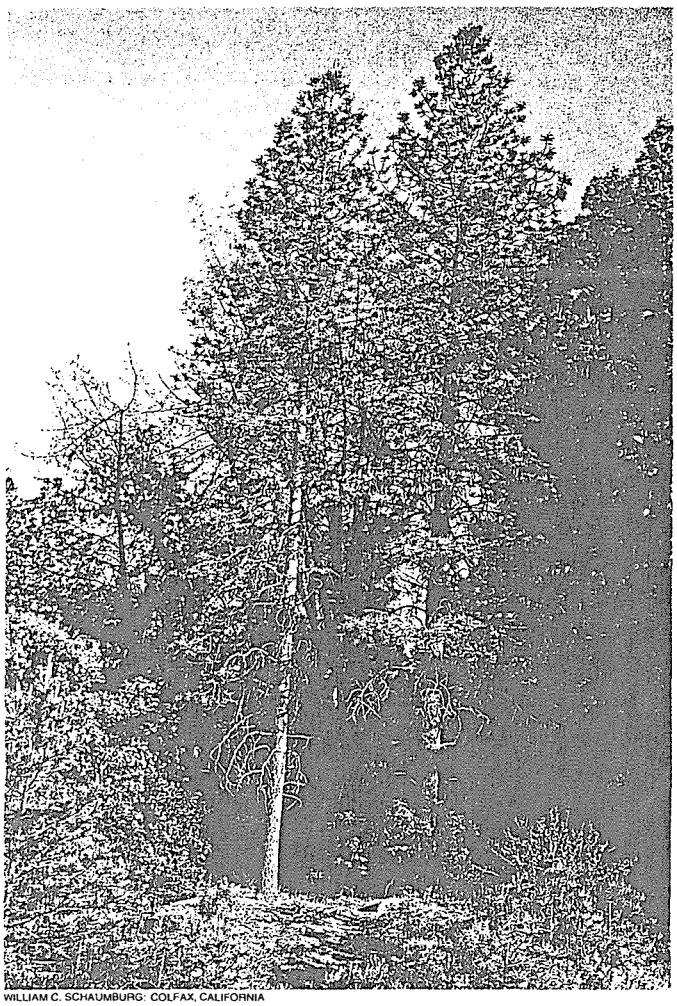
Grassland and savannah

At the lowest elevations of the Sierra Nevada, extending into the Sacramento Valley to the north and San Joaquin Valley to the south, are the great grasslands of the state. Together these are often called the Central Valley. In the past, these areas were generally dominated by perennial grasses (grass plants that persist for several years). However, at the present time, much of it is dominated by annual grasses, grass plants that must re-sprout from seed each year. Because the grasslands are also desirable areas for growing a variety of grains, vegetables, and fruits, many acres that were formerly grassland have been converted to producing foodstuffs or fiber. This zone also supports a livestock industry, primarily cattle.

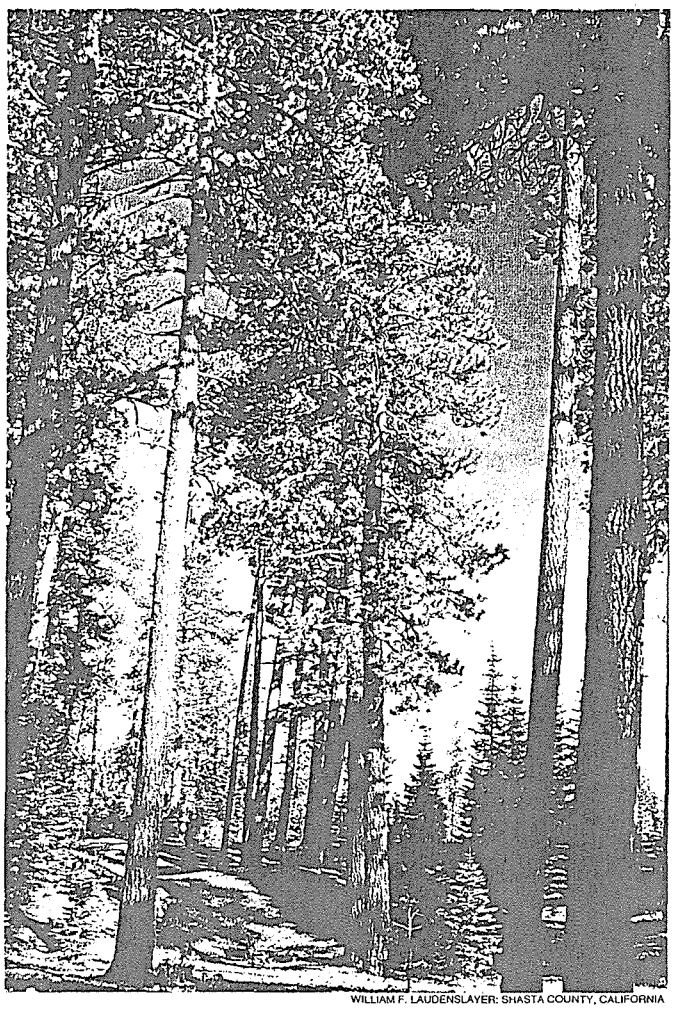
Associated with the grassland to an elevation of about 2,000 feet, especially on well-drained soils and in valley bottoms, is the valley oak savannah. This plant community is characterized by open stands of valley oaks over grasses. Tree densities are higher in moister areas and more sparse in drier areas.

The characteristics of the grasslands vary widely depending upon the time of the year. The Sierra Nevada generally has a Mediterranean climate, with most of the precipitation falling be-

Valley oaks, *top*, are found to an elevation of about 2,000 feet. These large trees (up to 80 feet) have massive, wide-spreading limbs and dark, lobed leaves. Blue oaks, *center*, are shorter, not as wide and "more open" than valley oaks. They are usually found at slightly higher elevations. The erratic rocks in the grass field are common in the foothills of Northern California. While this stand of blue oaks is nearly uniform, digger pines, *bottom*, are often mixed in with them. They tend to be multi-trunked, not very tall, and sparse-looking.



WILLIAM C. SCHAUMBURG: COLFAX, CALIFORNIA



WILLIAM F. LAUDENSLAYER: SHASTA COUNTY, CALIFORNIA

Ponderosa pine and Jeffrey pine are very common from about 1,000 feet to 7,000 feet on the west slope of the Sierra Nevada and are also found on the drier east slope. Ponderosa pine is easily recognized by the plate-like reddish-brown or orange bark of mature trees. Branches are evenly spaced and the tips tend to lift upwards. They have well-developed crowns on straight trunks.

tween early November and the end of March. In years when the precipitation is "normal," grasses begin to become green toward late November. The green color generally lasts well into May, after which the grasses turn a warm yellow color.

Grasses also change in height through the season. At the beginning of the cycle, the newly-green terrain is covered by short grasses. By the end of the growing season, some of the more dominant grasses, such as wild oats, may approach two feet or more. The height of grasses will generally be less in areas grazed by livestock, depending upon the stocking levels and the proximity to water.

Valley oaks may be scattered over a grassland or may form rather dense forests. Most of the trees in this community are winter deciduous. Individual valley oaks may approach 80 feet in height with crown diameters as great or greater. The crowns are generally rounded, especially in sparser settings, and there are usually openings in the crowns. The leaves are large and lobed, appearing deep green from above. The trunks and limbs are generally massive, and the limbs are often quite twisted. The bark is usually gray and checkered.

Blue oak/digger pine zone

The blue oak/digger pine zone ranges slightly higher in elevation than valley oak (from about 500 to 3,000 feet in elevation). Blue oaks are often associated with digger pines, as well as with live oaks and shrubs such as ceanothus and manzanita. The terrain in this zone is generally steeper and rockier than in the valley oak savannah or grassland. Trees are generally sparsely distributed over the landscape with an understory of grasses.

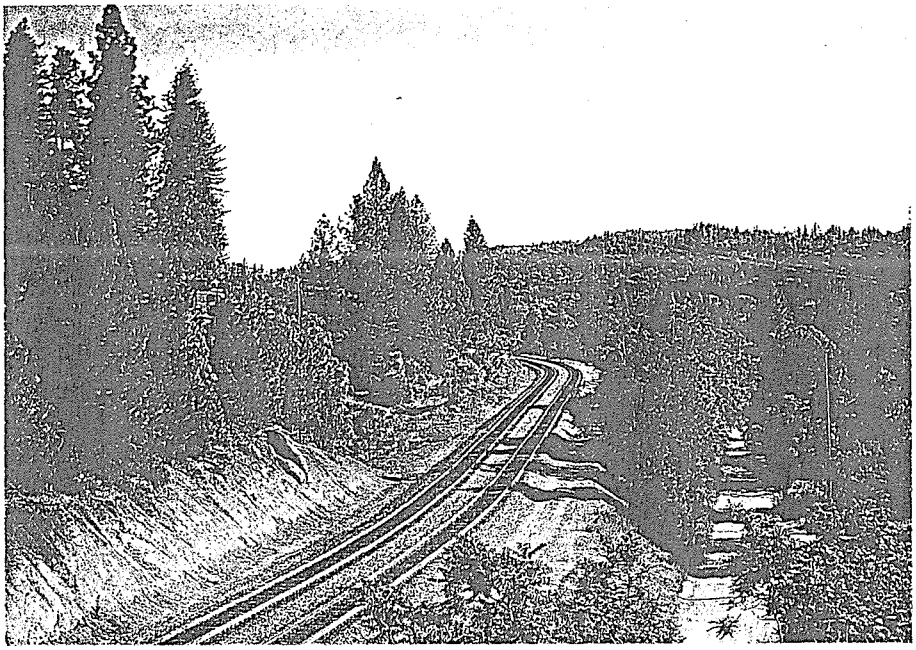
Blue oaks are winter deciduous; however, live oaks are not. Blue oaks may reach 50 feet in height and are low-branching trees with widely spreading crowns. The leaves are large, lobed and bluish-green in color. Live oaks, also found at elevations above blue oaks, are generally under 50 feet in height and usually have very rounded crowns. Some species may be taller and have more-spreading crowns. The leaves are green and not particularly lobed. The bark is smooth and whitish to gray in color. Representing these varieties of trees is may be done with shape and color.

Digger pines generally do not exceed 50 feet in height. The main trunk often divides into two or more secondary trunks. The bark color tends to be rather gray and the needles are long and gray-green. This tree has a very wispy appearance with an open crown and relatively few needles when compared to other pines. Digger pine cones are massive, up to eight inches in length; they could be modeled on foreground trees in larger scales.

Ponderosa and eastside pine

Ponderosa pine is one of the most

California Scenery: The Sierra Nevada



WILLIAM C. SCHAUMBURG: COLFAX, CALIFORNIA; MAY, 1994

CHRISTOPHER P. D'AMATO: KEDDIE WYE, CALIFORNIA; JUNE, 1977

common trees in the western United States and Canada. Its range includes the eastern slopes of the Cascades through the Okanagan Valley in British Columbia, then extends down to the Front Range in Colorado. It is found through the San Juans into New Mexico, then westward back to the Sierra Nevada. Ponderosa pine is relatively easy to recognize once its characteristics are known, and certain of its features may be easily adapted for modeling.

Ponderosa pine is generally found higher than blue oaks (from about 1,000 to 7,000 feet in elevation). These pine forests vary from open woods with a few scattered trees over grasses and shrubs, generally at the lower elevations of its range, to denser forests mixed with incense cedar, white fir, and black oak, generally at the middle and higher elevations. The terrain ranges from relatively level places to steep hillsides.

Both ponderosa and Jeffrey pine are similar in general appearance and share domains. Maximum heights may reach 150 feet. However, ponderosa and Jeffrey pine on the east slope are limited to about 120 feet. Trunks are rather straight, especially among young trees. As the trees age, the bark color changes to a yellow orange or cinnamon color. The trees differ in general bark texture, with ponderosa bark appearing as a series of plates and Jeffrey bark being deeply fissured. The needles are long. Ponderosa needles vary from yellow-green to dark green, whereas the color is more blue-green on Jeffrey pines.

Mixed conifer forest

The mixed conifer forest zone is found higher than ponderosa pine, from about 2,500 to 7000 feet in elevation. It is a mixture of ponderosa pine, sugar pine, lodgepole pine, incense cedar, white fir, Douglas-fir, and black oak. Mixed conifer forests generally have rather dense groupings of trees resulting from the deep, fertile soils often found in this zone.

Incense cedars may reach 90 feet in height; they have a dense, narrow crown. The foliage is bright green with scale-like "needles." The bark is cinnamon in color, furrowed and peels in strips. Modeling this species in a recognizable fashion would be a challenge, but it may be practical to attempt a few for foreground purposes.

The massing of trees becomes significant when modeling scenery. Ponderosa pine rises out of the underbrush in areas where light can get to the forest floor and allow understory plants to develop (*top*). Reddish soils are encountered near Colfax on the former SP main over Donner Pass. Farther north at Keddie Wye, firs begin to take over.

Sugar pines may reach 200 feet in height. The trunks are very straight; the bark is reddish-brown and formed as plates. The needles are long, bluish-green and the characteristic appearance of the trees, especially as they age, is flat-topped.

White firs often exceed 150 feet in height and have dense crowns with short green to blue-green needles. The bark is quite rough and on young trees tends to be dark brown to black. As trees mature, the color becomes gray.

Douglas-fir is another common western tree and is especially well-known in the Pacific Northwest. They may reach 250 feet there, but in the Sierra Nevada Douglas-firs are generally much shorter. The crown is rather dense, in contrast to the pines, and the needles are short, densely-packed and green to blue-green. The bark tends to be red-brown and is deeply fissured in mature trees.

Black oak is a deciduous oak. The trunk often splits into two or more trunks and may be bent or leaning. Black oaks may reach heights of 80 feet. The bark color is dark to almost black and checkered. The leaves are large and lobed; newly-unfolding leaves are pinkish, maturing to glossy green and phasing through yellow or yellow-orange to brown as autumn progresses.

Red fir and lodgepole pine

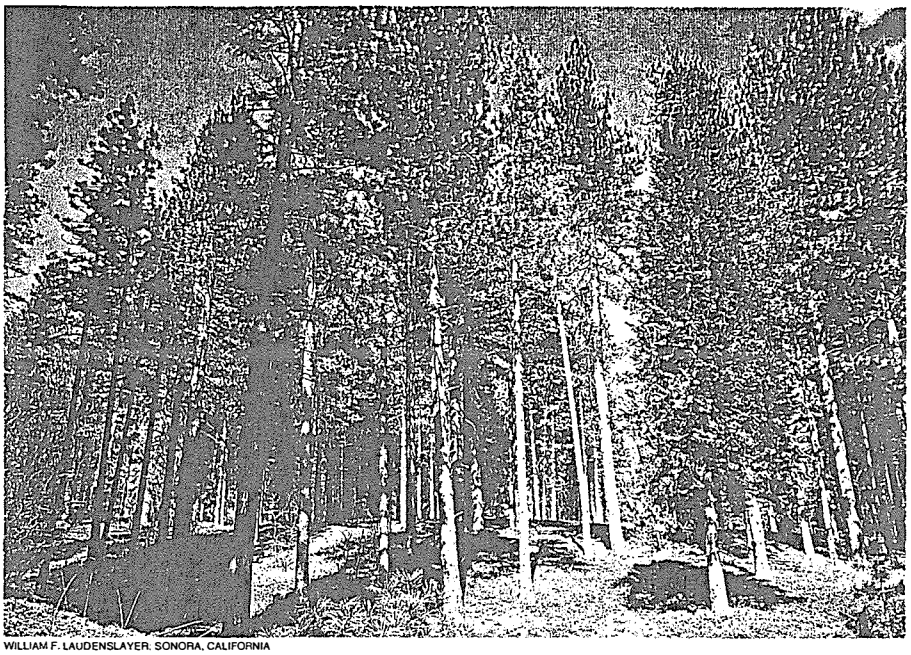
As one continues to go east and gain elevation in the Sierra Nevada, the forest changes its character again and a new community is encountered. Red fir extends from about 6,000 to 9,000 feet in elevation and is usually found above the mixed conifer forests. This forest tends to exist as a dense, monotypic forest, often with large amounts of dead material on the ground.

Lodgepole pine also grows in large stands above 6,000 feet, generally within and above the red fir belt. Lodgepole pine is often found at the edges of mountain meadows as the only tree in a dense forest or mixed with aspens.

Red firs may reach 150 feet in height and have dense, dome-shaped crowns of short, dark green to silver-blue needles. Newly-grown needles have a silver cast to them. As the trees age, the bark develops from being very smooth to deeply fissured; the ridges between the fissures may have a reddish tinge.

Lodgepole pines may reach 100 feet and have straight trunks and small, dense crowns. The needles are short and green in color, and the bark has a scaly appearance, varying in color from gray to orange-brown.

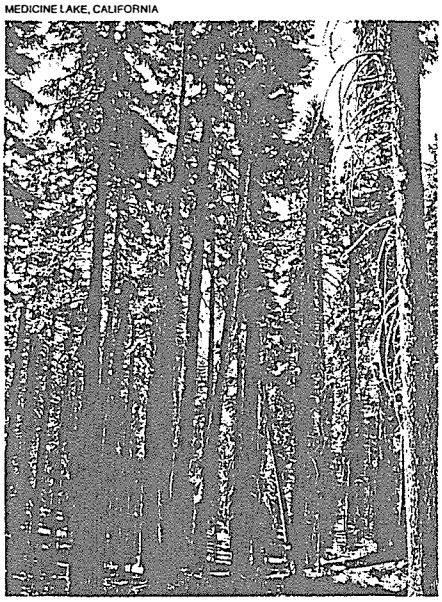
Next month we will complete this survey, starting at the crest of the Sierra Nevada and working our way down to the desert floor.—EDITOR



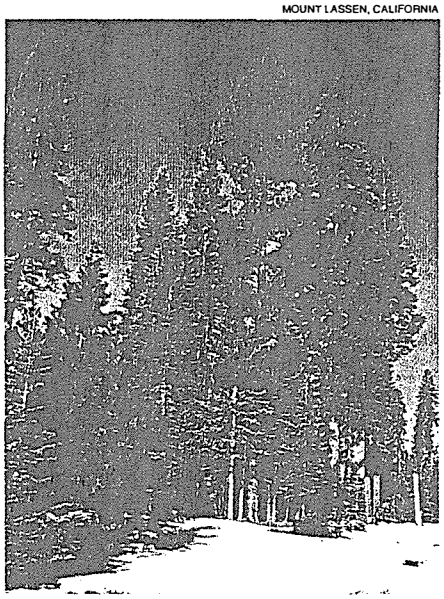
WILLIAM F. LAUDENSLAYER, SONORA, CALIFORNIA

Mixed conifer forests develop at elevations between 2,500 and 7,000 feet (*above*). Firs (*center*) have a much tighter branch structure and shorter needles than most pines. When fully grown, the limbs have a tendency to droop downwards, then rise upward in a shallow curve. Lodgepole pine, *bottom*, is found near the timber line with aspens or in soild stands.

MEDICINE LAKE, CALIFORNIA



MOUNT LASSEN, CALIFORNIA



DONNER LAKE, CALIFORNIA

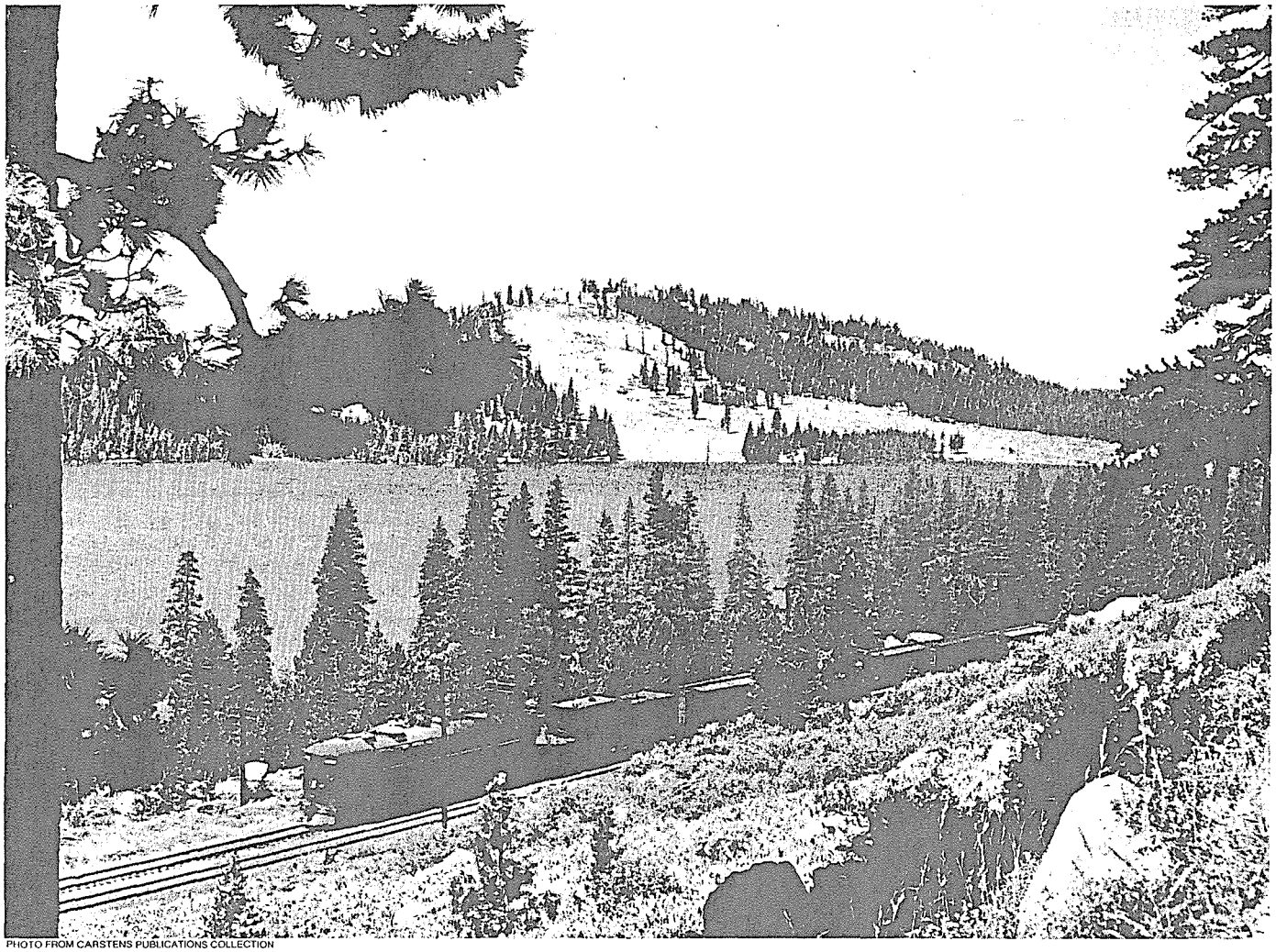


PHOTO FROM CARSTENS PUBLICATIONS COLLECTION

Crossing the Sierra Nevada at over 6,000 feet, the SP passes through the alpine vegetation zone at Donner Pass. Trees and soils thin out at the highest elevations and shrubs and low-growing plants, stunted and twisted by wind and weather, take over.

California scenery: The Sierra Nevada, Part II

From the crest to the desert floor/**William Laudenslayer, Jr.** and **Herman H. Darr**

Last month the authors began a survey of the dominant plant communities and trees across the Sierra Nevada, going from west to east. This month they conclude their study, picking up the story at an elevation of 6,000-7,000 feet and going over the summit into the drier country east of the range.—EDITOR.

As discussed last month, the plant life of the Sierra Nevada changes with both altitude and latitude. As one moves into the higher elevations, the effects of the severe winter weather and the short growing season are apparent throughout the Sierra Nevada. The soils become rocky and thin, with exposed rock surfaces common. Just as the climate becomes more extreme, so do the slopes, and the patches of snow on the increasingly rugged terrain give way to a year-round snow cover on some of the highest peaks in the United States.

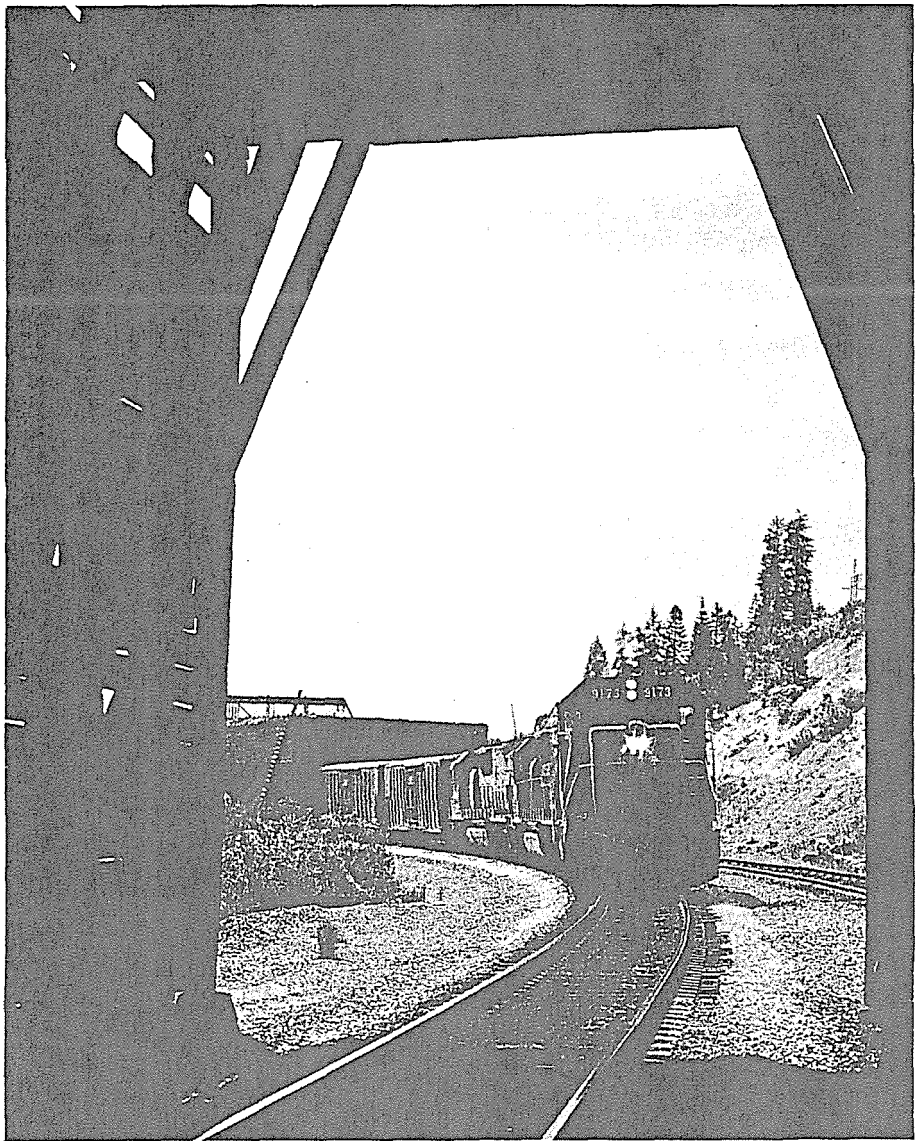
Alpine zone

Alpine vegetation is found at the highest elevations of the Sierra Nevada. If trees are present they are generally white, whitebark and lodgepole pines, often widely scattered, dwarfed and twisted. Understory plants are perennial herbs, dwarf shrubs and cushion plants. The shrubs tend to be short and twisted, and their foliage varies from green to gray. They frequently have thick trunks for their small size, the result of climate, wind, snow and ice. Herbaceous plants also range from green to gray in color. In the late spring or early summer many of the plants are in bloom; the flowers are often yellow in color, although reds, pinks and other hues are present.

Eastside mountain vegetation

At the highest elevations of the Sier-

California scenery: The Sierra Nevada, Part II



CHRISTOPHER P. D'AMATO: NORDEN, CALIFORNIA; JUNE, 1977

The snowsheds at Norden see a short summer. Note the exposed soil in the cut; the steepness of the slope leads to continuous erosion, which leaves the surface bare, and the weather makes it difficult for plants to establish themselves and stabilize the bank.

ra Nevada on the east slope are lodgepole pine, red fir and mixed conifer communities. Lodgepole pine and red fir forests are generally similar to those on the west slope of the mountains. However, the mixed conifer forests are usually composed of ponderosa and Jeffrey pine mixed with white fir.

Below the mixed conifer zone, at elevations from 4,000 to 7,000 feet, is found eastside pine; at higher elevations this forest is composed of Jeffrey pine, whereas at lower elevations, ponderosa is more common. Nearly a continuous belt of eastside pine occurs from about the Southern Pacific mainline and Interstate 80 north. To the south, eastside pine may be found in specific locations. With less rainfall, these forests are more open, with fewer trees than on the west slope. Understory grasses are common, and sagebrush and bitterbrush can be found in the more open sites.

Below eastside pine are pinon pine and juniper woodlands on the slopes and basin sagebrush on the flats. The pinon pine and juniper woodlands consist of sparse, small trees with shrubs and grasses under the trees.

Pinon pine and juniper are both relatively short, bushy trees reaching 25 to 35 feet in height, with exceptional western junipers approaching 60 feet. Pinons generally have short, gray-green needles. When mature, they are well rounded but have crooked trunks. Western junipers have blue-green, scaly foliage. The trunk is often twisted and the shape of the crown varies from columnar in young trees to well-rounded as they mature.

Sagebrush and high altitude desert zones

Basin sagebrush takes over in the lower elevations and flatlands, along with grasses and other herbaceous species scattered between individual plants. Plants commonly described as sagebrush actually include a number of shrub species, of which basin sagebrush and bitterbrush are quite common. Basin sagebrush may grow to around ten feet in fertile locations but is often much shorter. The crown is composed of dense foliage, gray-green in color, and is well rounded.

Bitterbrush may also approach ten feet but is usually much shorter. The crown often dense and green to yellow-green in color. When flowering, bitterbrush produces a multitude of small, yellow flowers. Both plants may be found together or alone. On poor sites, like along ridges and hillsides, the plants are shorter and more widely spaced than on better sites. On the deeper soils in valleys, plants are generally taller and more closely spaced; canopies may sometimes touch. As one moves farther into the Great Basin and in the valleys most affected by the Sierra Nevada rain shadow (the Owens Valley, for example), the plants are sparse and desert conditions and vegetation prevail. There may be less than 10″ of precipitation per year here, and the soils likewise change.

Variations & localized communities

The above discussions only describe the plants that dominate large portions of the landscape. Smaller patches of other communities may be found associated with them in specific areas. Also, topographic features may permit patterns not ordinarily expected based on the elevation and latitude of a specific location. Finally, we have concentrated on native plants and have not considered reforestation efforts or ornamentals, either planted or escaped from cultivation.

Riparian vegetation is dependent on the presence of surface water or is found along irrigation channels; some species associated with it may occur in areas having a high water table (natural sub-surface irrigation). Riparian areas include many species of trees, shrubs, grasses and grass-like plants. They are some of the richest plant communities in the Sierra Nevada. We will only describe several of the more typical trees found in these areas.

In riparian zones within the mixed conifer forest can be found mixtures of maples, alders and dogwoods. At higher elevations, the trees shift to aspens, alders and cottonwoods. At the edges of the riparian zone, conifers from farther

up the slope mix in with the broadleafed riparian trees. On the east slope, Fremont cottonwood and a variety of willows are the dominant trees.

Fremont cottonwoods are found on both the west and east slopes of the Sierra Nevada. They grow to around 60 feet and have smooth trunks and limbs with the bark color usually gray. The leaves are small and yellow-green in color, becoming yellow in the fall. The crown, too, tends to be quite open and rounded.

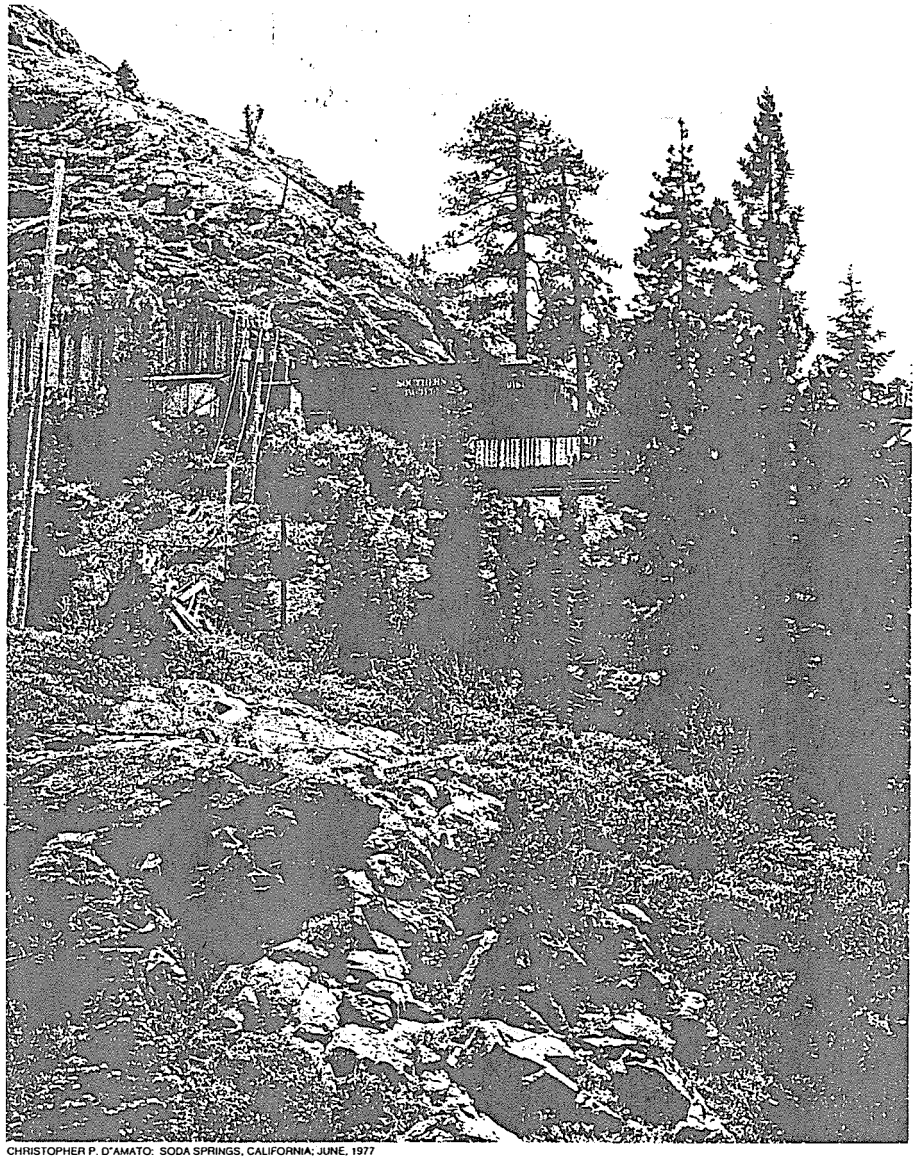
Sycamores grow at relatively low elevations on the west slope and are characterized by their buff-colored, patchy bark. The trunk usually divides into several trunks that spread into a broad crown. The leaves are quite large, up to nine inches in length, and are yellow-green in color. They quickly turn brown early in the fall.

Aspens grow in the Sierra Nevada at relatively high elevations. Individual trees may reach 60 feet in height. The limbs are smooth and the bark is gray to white, often with noticeable black scars. The crown is often rounded, and the leaves are small and light green, becoming yellow and occasionally tinged with red-orange in fall.

Alders found at lower elevations through the mixed conifer zone on the west slope may reach 90 feet, whereas those higher on the west slope or on the east slope are usually much shorter, perhaps reaching 20 feet. Alder crowns are relatively narrow. Branches spread towards the ends, and the leaves are small and appear dark green from the top. The bark color varies depending upon the species and may be from gray or gray-green to black.

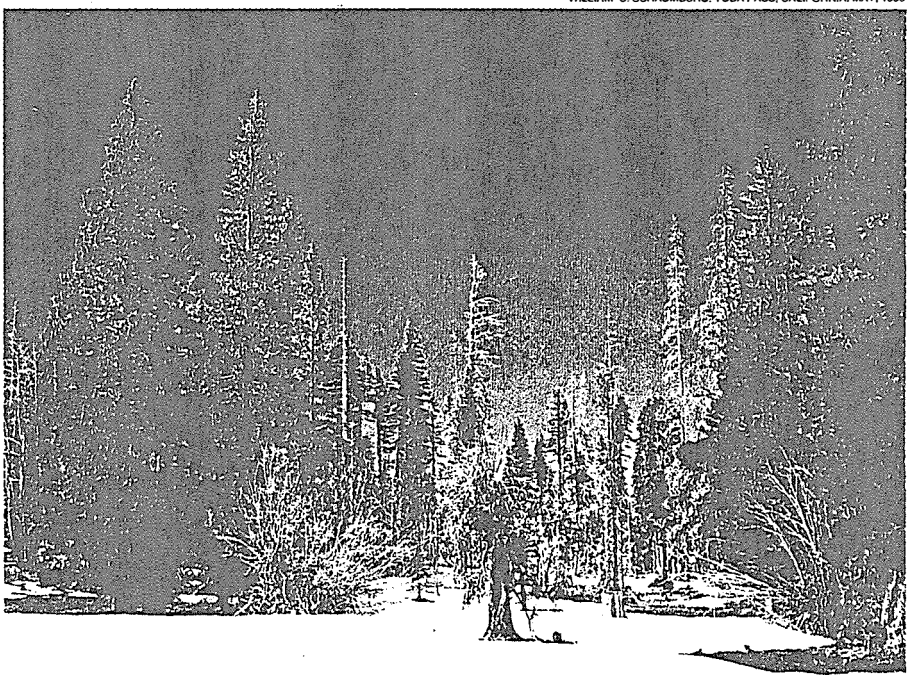
Wet meadows are found in most plant communities where the water is at or near the surface during the growing season. Dominant species include various grasses, grass-like species and other herbaceous plants.

In spring and early summer, meadows bloom with a variety of flowers of various colors, including yellow, pink, white and blue. Often wet meadows have bands of dense, shrubby groups of willows or alders growing along the watercourses. Meadows that have seen little or no grazing for a period of time will have a denser stand of plants with dead material, or litter, from previous years. The watercourses passing through



CHRISTOPHER P. D'AMATO: SODA SPRINGS, CALIFORNIA; JUNE, 1977

WILLIAM C. SCHAUMBURG: YUBA PASS, CALIFORNIA; MAY, 1993



Spring brings color to the alpine zone of the Sierra Nevada as the small plants flower. The *top* photo shows the cascading of vegetation types through this elevation, as well as the rock surfaces that begin to dominate the landscape. The closest trees are ponderosa pine. Eastside forests (*right*) have smaller, more widely-spaced trees.

WILLIAM F. LAUDENSLAYER: DOUGLAS COUNTY, NEVADA; JULY, 1983.

Junipers and pinon pines share the dry, mixed woodlands of the east slope of the Sierra Nevada between 4,000 and 5,000 feet. They are both short, tightly-branched trees with the branches starting close to ground level. Western junipers tend to have a slightly more open structure than the pinons, and their scaly needles are blue-green. Sagebrush and similar species fill in between the trees, then dominate the lower flatlands. At the southern end of the Sierra Nevada, other desert plants join sagebrush.

them will have narrow stream beds with overhanging banks, and the willows or alders will have rounded or cylindrical crowns.

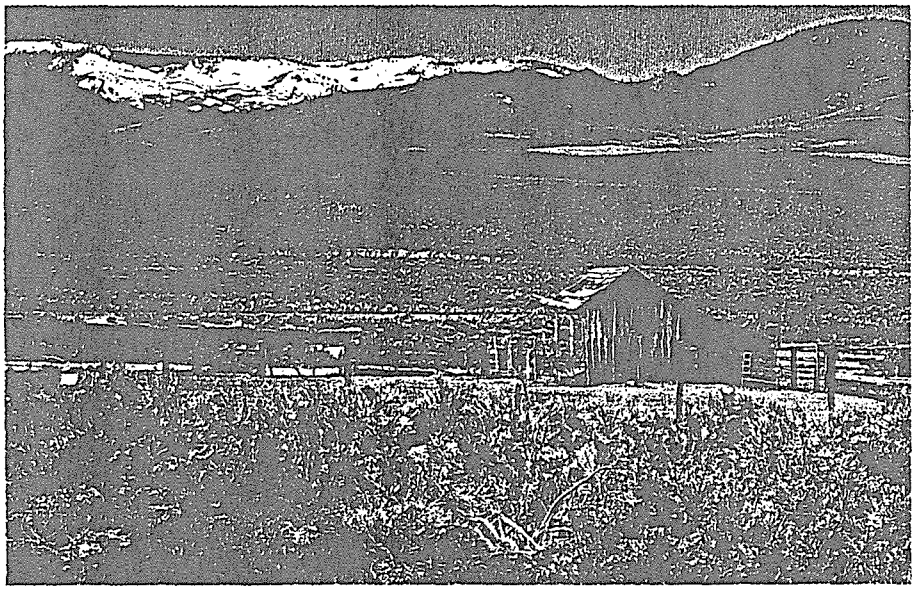
Improperly grazed meadows should be modeled with fewer, shorter plants, more deeply-cut watercourses with shallow water depths, and few to no overhanging banks and willow but not alder. Crowns are often grazed as high as the livestock can reach.

Chaparral, for the most part, is a shrubland found in forested openings caused by the loss of the overstory trees to any cause. They are especially found following severe fires before the trees can become re-established and on very rocky or poor soils. The specific composition of plants is often related to elevation, latitude and topography.

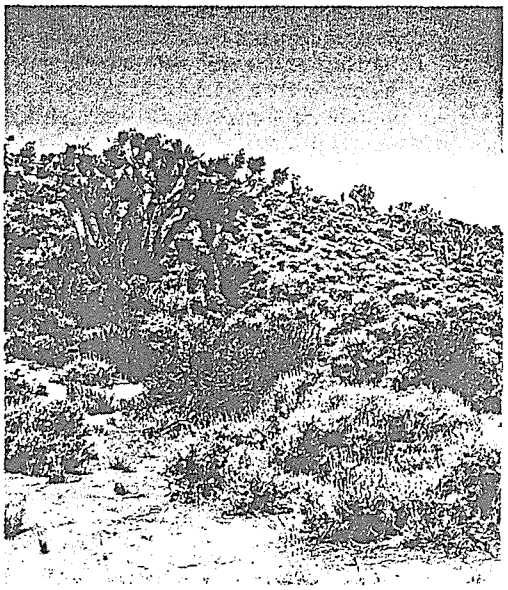
Typical plants include shrub oaks, manzanitas, chamise and various species of ceanothus. Plants are generally quite dense and, as chaparral ages, shrub crowns grow together and the understory grasses and shrubs decline. Many dead stems exist in old, decadent patches if fire does not occur. As chaparral ages, trees from the surrounding forest begin to invade and may dominate the area in time.

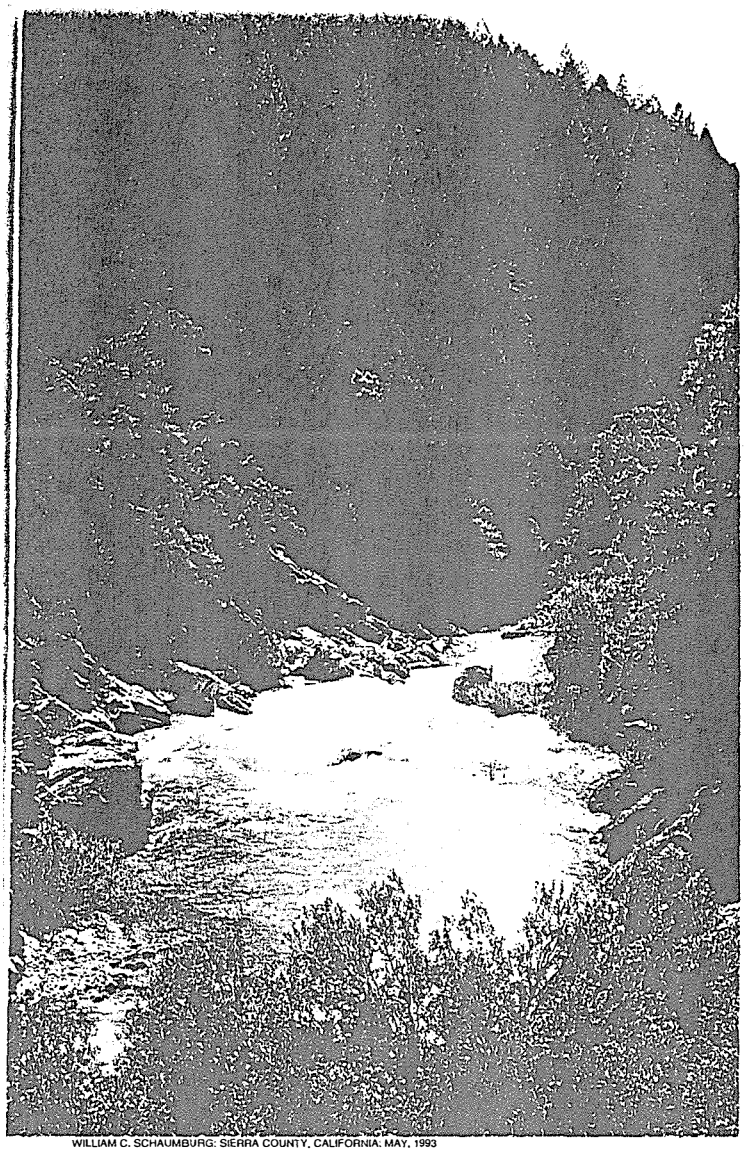
A number of species of both ceanothus and manzanita may reach ten feet in

WILLIAM C. SCHAUMBURG: SOUTH OF BECKWOURTH PASS, NEVADA, ALONG THE UP RENO BRANCH; MAY, 1993

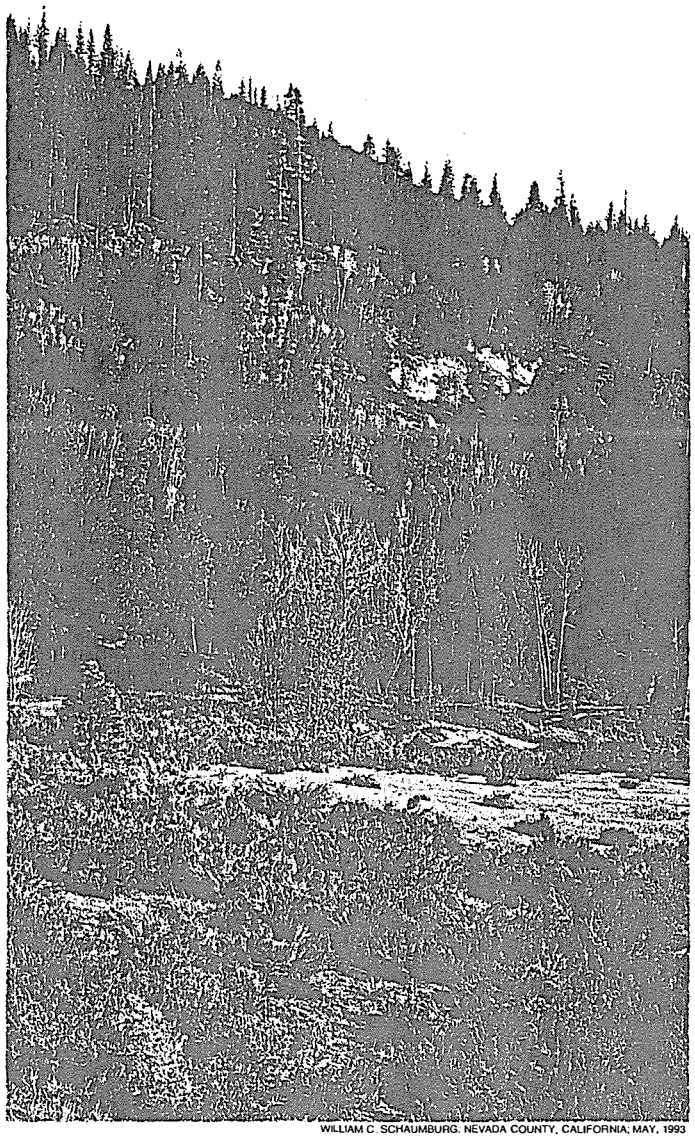


WILLIAM F. LAUDENSLAYER: KERN COUNTY, CALIFORNIA, JUNE, 1986





WILLIAM C. SCHAUMBURG: SIERRA COUNTY, CALIFORNIA: MAY, 1993



WILLIAM C. SCHAUMBURG: NEVADA COUNTY, CALIFORNIA; MAY, 1993

Two rivers, two days apart: the Yuba River (*left*) shows the typical riparian vegetation on the west slope of the Sierra Nevada, as well as the narrow valleys of the rivers there. The westward slopes are steeper and well-watered., and maples, alder and deciduous shrubs line the banks. Along the eastward-flowing Truckee River (*right*) one finds cottonwoods and willows at the same elevation.

the Sierra Nevada. Ceanothus crowns range from rather loosely to densely packed with leaves. Leaf size and shape vary by species; leaves are generally small (less than two inches long), and colors may be bright green to almost white. Generally the bark of manzanitas is rather smooth and bright reddish-brown with patches of gray.

Forests, especially unmanaged ones, contain numbers of dead and dying trees, as well as logs on the ground. Deciduous tree leaves gradually yellow, become brown and are lost. Needles on dying conifer trees turn from their normal green to gray color to red and orange. The needle color gradually fades out to more of a brown or yellow, and after more time needles fall from the trees, followed by small branches and larger ones. Bark, especially in thick-barked species, begins to slough off the trunk soon after the needles are gone. This accumulation of litter on the forest floor is part of the soil-building process, affecting its color and characteristics. Especially in foreground areas, these color and texture changes are worth modeling.

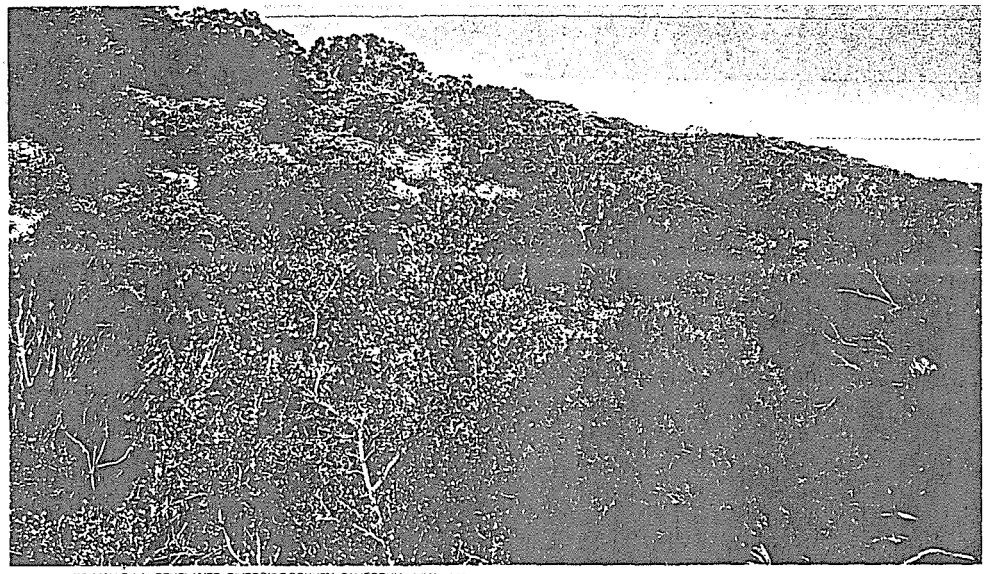
Trees may break off at or near the ground level, or they may be uprooted, especially in areas where the ground becomes soaked. On dead and dying trees, the tree trunk colors generally reflect the original color of the bark until the bark is lost, after which the bare wood may vary from almost yellow to gray, depending upon the species, then weather out to silvery gray. The texture of barkless trees may be smooth, as in ponderosa and Jeffrey pine, to deeply fissured, as in incense cedar.

Land use practices

Time also influences the appearance of the vegetation and the land at a site. Fire suppression, livestock grazing, timber harvest, mining, farming and urbanization are all factors that influence a landscape. To illustrate some of the changes, we will describe general vegetation characteristics for three periods of history: the mid-1800's prior to extensive development; from 1920 to 1940, when extensive grazing of livestock and harvest of timber took place; and the present, when grazing and timber harvest are more regulated.

In the mid-1800's, the natural vegetation could be considered to be in pristine condition. Fire frequency was probably higher; however, in many plant communities (e.g., ponderosa pine), fires were generally not as catastrophic as today. Uncontrolled livestock grazing was just beginning and streams in meadows were not as deeply cut. Timber harvest occurred, but it was generally for the local market. In the gold country and around Lake Tahoe, of course, timber harvest in the 1850's and later was very extensive to serve the mines and the needs of the populace for both fuel and construction material, as well as to provide the railroads with fuel and timbers. By the 1870's, a controversy over hydraulic mining and the silting in of

California scenery: The Sierra Nevada, Part II



WILLIAM F. LAUDENSLAYER: RIVERSIDE COUNTY, CALIFORNIA; JULY, 1977

Chaparral (*above*) takes various forms but is usually a rough mix of small trees and shrubs. The area shown here is in the San Jacinto Mountains at the south end of the range. Wet meadows also vary according to location; the photo *below* was taken six years after grazing was stopped at the site. The grasses have generally recovered.

downstream waterways had arisen in the Mother Lode; some effects of hydraulic mining remain visible today. At this time the forest included trees larger than those at present, probably fewer trees per acre on the average, and more grasses and fewer shrubs in the forests.

In the period from 1920 to 1940, fire suppression was the norm, livestock grazing on private and public domain lands in the Sierra Nevada was still largely uncontrolled (grazing was regulated within the National Forests), and intensive timber harvest became widespread. The decline in the frequency of natural fires caused shifts in the composition of plant species in some areas, increases in the numbers of shrubs and young trees in the forest, and more dead wood on the ground.

During these years, grazing, fire protection and timber harvest helped increase shrubs relative to grasses. Timber harvest was variable depending on the location. Forested areas were generally selectively cut and only the marketable trees were taken; trees that were too small or defective were often left standing.

Paradoxically, because of the large volumes of logging slash left on site and the prevalence of open fires and the use of steam donkeys and similar equipment, fires often swept the newly-logged areas. Desirable tree species (sugar pine, for example) were reduced relative to other species (e.g., white fir) in mixed forests. Stump heights varied depending upon the species and if there was any ground level fire damage to the tree, in which case they were cut higher. Dead trees were usually removed from harvest units.

Modelers who set their layouts during these years should consult photos of their selected areas and use them as a guide. Aerial photography became common in the late 1930's and was being used extensively in the West for flood control and other projects. Much of the film was exposed for agencies within the Department of Agriculture or other Departments, and researchers may access it at the National Archives in College Park, Maryland.

At the present time, fire prevention and suppression is being continued, but both the livestock and timber industries have become more regulated. The wounds left from the heavy livestock grazing period are being healed in many places. While the marks of gold dredging remain in some counties on the west side of the mountains, many of these disturbed areas now also disguised by grasses and trees.

Because of the intense timber harvests of the pre-World War II years, many forested areas are considerably younger with denser groups of smaller trees than previously had been seen. In west slope forests, reforestation and management of trees as even-aged plantations is a common practice. Most east slope forests and those west slope forests that are difficult to regenerate are managed by culling the older and larger trees, but letting the unmerchantable trees remain. The resulting landscape on the west slope is a patchwork of selective harvest units with different size classes of trees, whereas on the east slope the forests have smaller trees than in previous times but the appearance is often of an extensive forest.

While these articles have just touched on the vegetation of the Sierra Nevada, we hope they will provide useful ideas for modeling the fields and forests of the region. As we have seen, nature is not a monotone. The best model railroad scenery reflects that, not only in the vegetation, but also in the terrain, architecture and land use of an area. No matter what your subject is, discovering and portraying these features accurately on your layout will add a lot of enjoyment to the hobby.

The authors would like to thank Larry Saslaw and Don Behrens for their help with these articles.

WILLIAM F. LAUDENSLAYER: MODOC COUNTY, CALIFORNIA; JUNE, 1987